

ILLINOIS STATE WATER SURVEY  
ATMOSPHERIC SCIENCES SECTION

LEGISLATIVE ACTIVITIES RELATING TO  
WEATHER MODIFICATION IN ILLINOIS

by

Stanley A. Changnon, Jr.  
Principal Investigator

TECHNICAL REPORT NO. 3  
ILLINOIS PRECIPITATION ENHANCEMENT PROGRAM  
PHASE I

September 15, 1973

To

Division of Atmospheric Water Resources Management  
Bureau of Reclamation  
U. S. Department of Interior

Contract 14-06-D-7197  
September 28, 1973

## CONTENTS

	Page
ACKNOWLEDGMENTS. . . . .	1
ABSTRACT. . . . .	2
INTRODUCTION. . . . .	2
REVIEW OF WEATHER MODIFICATION LEGISLATION. . . . .	5
DEVELOPMENT OF STATUTE. . . . .	5
PUBLIC INTERACTIONS. . . . .	7
IMPLEMENTATION OF THE STATUTE. . . . .	8
MAJOR SECTIONS OF STATUTE. . . . .	9
SUMMARY. . . . .	10
REFERENCES. . . . .	11
APPENDIX. . . . .	12

## ACKNOWLEDGMENTS

This work was performed under the general direction of Dr. William C. Ackermann, Chief of the Illinois State Water Survey. Others on the Survey staff participated and contributed to this program. Principal among these was John W. Wilson, Floyd A. Huff, and Richard G. Semonin.

Great credit is due to Professor Ray J. Davis of the College of Law at the University of Arizona. Professor Davis was employed to work on the development of the Illinois statute, and his exceptional interest in this activity resulted in a model law fitting within the legal framework of the State of Illinois.

Others gave freely of their time to review the statutes and to assist in the many group and public contacts made in setting the stage for the statute's acceptance. Within the Department of Registration and Education, Allen M. Andreasen, former Deputy Director, and Dennis B. Alexander, former Legal Advisor, made helpful reviews of the statute and gave considerable advice in the initial phases of the statute's drafting. After his appointment in January 1973 Dr. Dean Barringer, Director of the Department gave his active support to the legislation.

The considerable interest of the Illinois Agricultural Association in this activity was a major factor in its advancement to the State Legislature. In particular, the interest and efforts of Harold Steele, President of the Association; Leonard Gardner, Secretary; William H. Brown, Jr., Director of the Department of Natural Resources; and Dean Sears of the Association are hereby gratefully acknowledged.

Dean Orville Bentley, Dean of the College of Agriculture of the University of Illinois, was interested in this activity and his interest and support are gratefully acknowledged. Professor N. G. P. Krausz of the College of Agriculture made a very useful review of the legislative document.

Others who extended great courtesy and assistance to the activity included Joe Berta, Superintendent of the Soil and Water Division of the Illinois Department of Agriculture, and his assistants. They gave useful advice regarding the planning of public relations, and they provided a forum for statewide presentations to explain the PEP program and the related legislative needs to the State directors of the Soil and Water districts.

Last but not least, were the considerable efforts of the Illinois legislators who sponsored the bill and argued so effectively for its passage. Among these must be noted Representative R. Bruce Waddell of Dundee and Representative Donald E. Brummett of Vandalia. Their deep interest in good law, in weather modification, and agriculture were important factors leading to the successful culmination of this activity of PEP.

## ABSTRACT

The purpose of this activity was to develop and secure a Illinois law that would permit and regulate weather modification activities within the state. Such legislation was deemed a prime requirement, not only for the proper execution of scientific experiments on weather modification in Illinois, but for the general benefit of citizens of Illinois through encouragement to properly conducted activities and protection from improperly conducted weather modification operations. It was our intention to develop a "model law" that reflected the best aspects of weather modification legislation and experience in other states, and which would serve as a model for future legislation in other states.

This effort began in October 1971 and was completed in September 1973 with the signing of the Illinois Weather Modification Control Bill, House Bill No. 770 and its accompanying appropriations, House Bill No. 771. This project was entirely supported by funds from the State of Illinois.

This project essentially consisted of four activities:

first, an investigation, largely through literature review, of the status of the state and federal legislation regarding weather modification;

secondly, the development of a statute text;

thirdly, interaction with groups who would be interested and effected by weather modification in Illinois so as to explain the need for the statute and its contents; and

fourth, efforts that got the statute implemented.

The major single effort consisted of the preparation of the statute document, and Professor Ray J. Davis of the University of Arizona was employed as a consultant to write the statute in concert with the staff of the Water Survey. The initial draft was reviewed by various groups in Illinois and the final draft of the statute, with commentary, was completed in October 1972. The statute through the assistance of the Illinois Agricultural Association, was brought into the Illinois Legislature in January 1973 and was passed into law in September 1973. Essentially, the law is a permissive control type of legislation which sets the framework for the specific regulatory activities which are to be developed and performed within the Illinois Department of Registration and Education.

## INTRODUCTION

The Illinois Precipitation Enhancement Program (PEP) was viewed as a two phase program. The first phase, scheduled to occur in 1971-76, concerned setting the proper stage for a well-conducted precipitation enhancement

experiment. The second phase, if pursued, was to be an actual experiment beginning sometime after the studies and activities of the first phase were concluded.

Since Illinois, at the start of PEP had in 1971, no legislation regarding the monitoring or control of weather modifications in the State, a prime requirement for the proper execution of future experiments, and for the general protection of the citizens of Illinois from improperly conducted weather modification operations, was the establishment of proper legislation. Thus, one of the ten study-activity areas of PEP (phase I) concerned weather modification control legislation for Illinois. The central goal of this particular activity area of PEP was to secure an Illinois law which would permit and regulate weather modification within Illinois, with the law based on the most meaningful regulations found among the weather modification laws of the other thirty states with laws. Since this activity was entirely oriented to state needs, the entire effort was supported with state funds.

One of the specific fears of PEP relating to an adequate state law concerned the proposed experimental phase II of PEP and other possible weather modification efforts. If Illinois had no statute when future weather modification experiments occurred, operational seeding projects could develop in or near and during the envisioned randomized experiments and thus could contaminate the results of experimental projects. This situation has been a problem for weather modification experiments in other states. As shown in Figure 1, 30 states in 1972 had some form of weather modification monitoring or control laws, and in 1972 the federal government enacted a law that required only the reporting of activities to the Department of Commerce.

However, the most important reason for enacting a proper permissive-control law was that it was deemed valuable and beneficial for the citizens of Illinois. It needed to be enacted, hopefully, before emergency conditions, such as a major drought, brought upon good and bad weather modification activities. Failure of poorly executed efforts in droughts might lead to a hurried, ill-conceived, and totally restrictive weather modification law. Obvious benefits have been shown by agricultural-weather studies (Huff and Changnon, 1972) relating to the use of precipitation enhancement to obtain crop yield increases in Illinois.- Furthermore, weather modification involving rain enhancement in Illinois has occurred during previous droughts in the 1950's and the 1960's. Although these efforts were minor and inconclusive, they indicated to us that the next major drought in Illinois would bring forth more weather modification activities within the state.

The securing of the envisioned weather modification control law for Illinois was an activity consisting of four phases. The first phase consisted of a review of state and federal weather modification legislation to determine their applicability to Illinois. After this literature review, came two concurrent phases. The second phase was the actual development and writing of the statute text. This was found to require the efforts of a national expert who did much of the difficult legal research and text preparation. The third phase, which of necessity was concurrent with the second phase, involved public

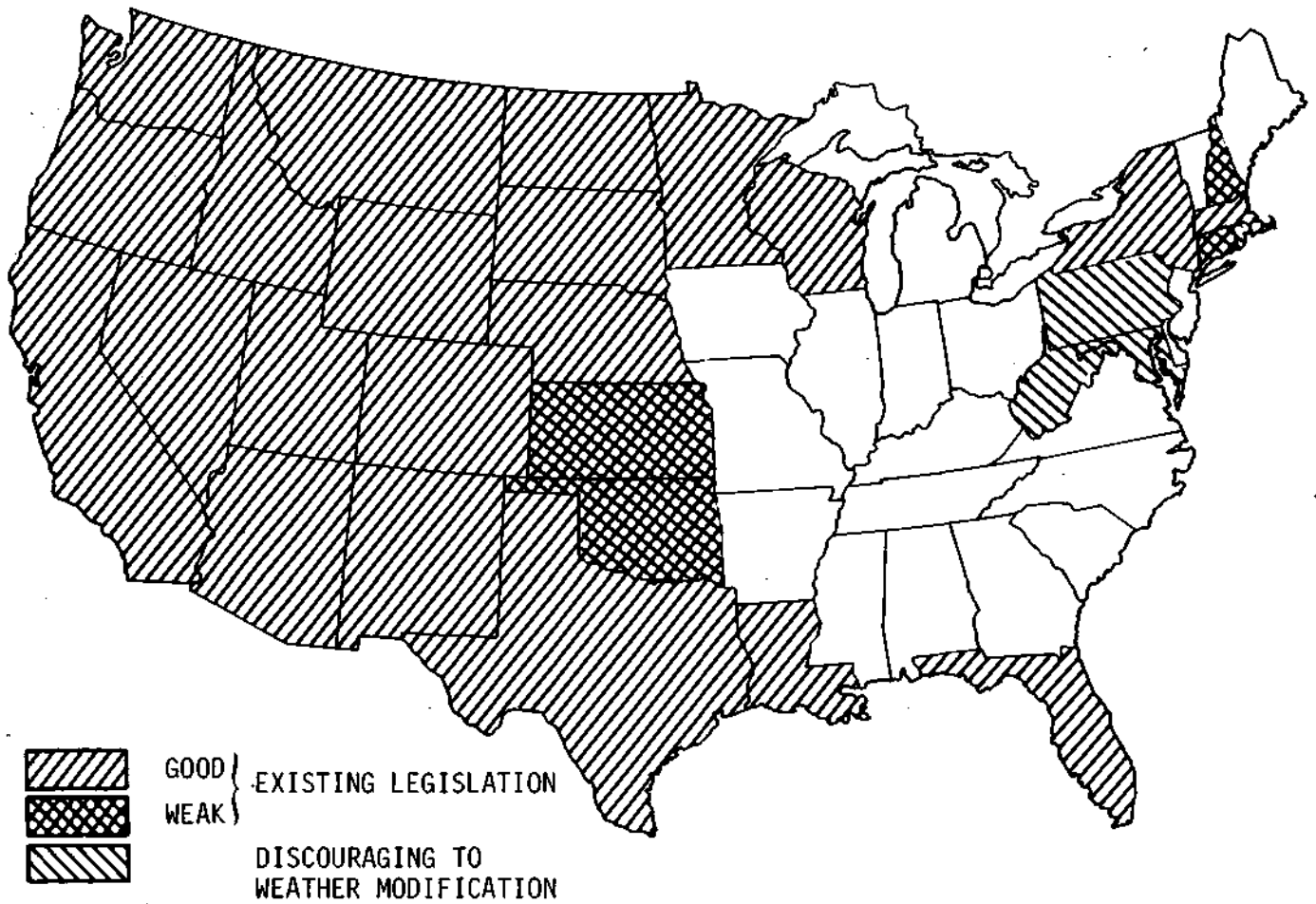


Figure 1. States in 1972 with varying classes of laws relating weather modification.

interaction. This effort consisted of meeting with various state officials, agricultural interest groups, and many citizens to discuss weather modification and to emphasize the need for proper legislation. The final and fourth phase in this legislative activity consisted of getting the bill implemented within the Illinois Legislature. These aforementioned efforts in this total activity required nearly two years to accomplish, beginning in October 1971 and ending with the passage of the Illinois Weather Modification Law, House Bill No. 770, by the State Legislature in June 1973 and its signing by Governor Walker on 12 September 1973.

The following portions of this report include four sections, each devoted to the four major phases of this activity. The summary section describes the highlights of the Illinois statute and the successful culmination of this activity area.

#### REVIEW OF WEATHER MODIFICATION LEGISLATION

This activity was pursued largely during October-December 1971, and many references (Schleusener, 1970) were studied. Principally, the recent laws passed in Texas and Colorado were studied as representing the most advanced and proper weather modification statutes. As a part of this review effort, Professor Ray J. Davis of the College of Law of the University of Arizona was contacted to serve as a consultant on this general matter. As a part of this activity, Professor Davis developed an extensive manuscript presenting, for the various parts of all previously written state laws, 3 or 4 examples for each type of provision. This catalog of provisions from various other state laws was extremely useful in studying the possible differences and alternatives that existed. Essentially, this 3-month review and literature study indicated that the development of a comprehensive Illinois statute was a task beyond the capability of the scientific staff of the Illinois State Water Survey. However, the central aspects of an optimum state law were determined by our staff. These essential aspects included 1) a desire for a weather modification licensing function within the state, 2) a desire for a permit for any specific operation in an area (allocation of benefits), and 3) a desire for regulation of on-going operational activities. In summary, a permissive-control form of statute was deemed best since potential benefits to the Illinois citizens from weather modification were obvious (Huff and Changnon, 1972).

#### DEVELOPMENT OF STATUTE

Because of the complex nature of the problem, the services of an expert in the legal aspects of weather modification were enlisted. Professor Ray J. Davis of the University of Arizona College of Law agreed to work as a

consultant with the Water Survey, and in this capacity to prepare a draft of the statute. His credentials in this unusual field were well-established (Davis, 1968; Davis, 1970).

Preliminary meetings between Survey scientists and Professor Davis were used to formulate basic decisions regarding the statute, and to set an approximate time schedule for completion of this phase of the activity. It was decided in December 1971 that:

- 1) Illinois should have a permissive-control type of weather modification law, rather than rely on common-law, and if finances were available, it should be developed as a "model law";
- 2) this law should be broad in scope, delegating development of the details of the administration of it to the state agency chosen to handle the activity;
- 3) the Department of Registration and Education within the state government was the most likely agency for the responsibility of this statute; and
- 4) the statute should be completed and hopefully entered into the legislative process by January 1973.

After reaching these preliminary decisions, Survey staff members presented their thoughts and recommendations to members of the Department of Registration and Education in Springfield in December 1971. The approach involving Professor Davis and the basic aspects of the legislation met with their approval, and detailed plans to proceed along these lines were formulated.

Professor Davis performed five major activities during the January-October 1972 period:

- 1) He became familiar with Illinois law, paying particular attention to those facets in any way relevant to weather modification (e.g., liability and tort law);
- 2) he worked closely with Department of Registration and Education legal counsel to integrate the departments' administrative/regulatory roles into the statute;
- 3) he wrote a first draft of the model law by April, with commentary describing each section;
- 4) he began to finalize the statute's wording to be ready for submission to the legislature after receiving reviews and comments on the first draft in July (as developed by Survey scientists, Bureau of Reclamation scientists, staff of the College of Agriculture of the University of Illinois, the staff of the Illinois Agricultural Association, and the Departmental staff in Springfield); and



5) he wrote the final draft of the statute along with commentary by October, and he presented it for final discussion with Survey scientists along with an amendment section needed to alter the existing departmental bill so as to add the new weather modification activity to it.

#### PUBLIC INTERACTIONS

One of the major tasks deemed necessary prior to preparing and securing a meaningful and workable statute on weather modification included discussions with various state organizations and weather-interest groups who would be affected directly or indirectly by weather modification and thus by the legislation. Most of the public information activities pursued for PEP during 1972 were aimed at dissemination of knowledge of PEP at various public and governmental levels to secure both understanding and support for the potential legislation. Since benefits of rain increase appeared greatest to agriculture, most contacts were made with agricultural interests.

A general information pamphlet about weather modification, law, and PEP was needed for wide distribution to state citizens. The PEP pamphlet was made as succinct and short as possible, and filled with visual aids (diagrams and pictures). It was printed in March 1972 and then used for both mailings and distribution at talks given by Survey staff.

A series of slides depicting the status of weather modification and describing all facets of PEP was prepared so that Survey staff members could use these in public presentations. Early in 1972, Dr. William C. Ackermann described PEP at the Rotary Club of Champaign-Urbana, and Glenn Stout described PEP to officials of the Illinois Board of Economic Development in Springfield. In March 1972, Dr. Ackermann and Mr. Changnon briefed Dean Orville Bentley and other officials of the College of Agriculture of the University of Illinois on PEP with specific reference to the legislative aspects. Their understanding and advice for PEP and the legislation were important in subsequent activities.

Mr. Changnon was invited to attend a meeting in March 1972 at the State Office of the Soil Conservation Service. He talked about PEP to the senior SCS staff and to all the area conservationists for Illinois. In March, Mr. Changnon and Dr. Ackermann also made presentations at four regional workshops, reaching all of the state Directors of the Soil and Water Conservation Districts in Illinois. Thus, in 5 meetings held within a 16-day period, almost 450 key people in the Soil and Water Conservation Service were informed of our programs in weather modification and the needed legislation.

John Wilson described PEP to the Central Illinois Chapter of the Illinois Society of Professional Engineers. Mr. Wilson also went to Dixon, Illinois, for a talk on PEP at a meeting of the Northern Illinois Section of the Soil Conservation Society of America. Captain H. W. Albers, Executive Secretary of Interdepartmental Committee for Atmospheric Sciences, requested 50 copies of our PEP pamphlet and these were supplied to him along with an 11-page document describing Phase I of PEP.

At our invitation, Mr. Harold Steele, President of the Illinois Agricultural Association, and Mr. Leonard Gardner, of that Association, visited the Survey in May to discuss PEP with Dr. Ackermann and Mr. Changnon. A formal presentation of our PEP plans was made to the Association's executive staff in Bloomington in August. They became quite interested in our proposed weather modification statute and offered to review it. They furnished us with many useful comments.

The PEP information pamphlets were distributed by the College of Agriculture to the county agents of the 102 Illinois counties in June 1972.

During the fall of 1972, two talks about PEP were made on radio, both recorded on tape at the University of Illinois. These Illinois information tapes which described PEP and the legislative document were distributed to radio stations throughout the state under the auspices of the University of Illinois.

Mr. Changnon made during 1972 two TV-tape interviews concerning PEP. These tapes were done for the public information group of the Illinois Agricultural Association and they were distributed to TV stations throughout Illinois. Mr. Changnon also presented a detailed Seminar on PEP to the staff of the Illinois State Water Survey.

Thus, many means of reaching various echelons of people involved in agriculture in Illinois were pursued to discuss PEP and the desired legislation. Furthermore, where possible, the general public was informed, largely through news releases, radio, and TV shows. The effort was systematic in attempting to reach the primary private agricultural interests, state agricultural interests, and university agricultural interests, and then to secure their understanding, actual review, and inputs into the legislative document.

#### IMPLEMENTATION OF THE STATUTE

As was mentioned in the previous section of this report, the Illinois Agricultural Association expressed great interest in this model law because it had relevance to the agricultural community and it was deemed by them to be a potential "good law" for Illinois. They offered to present the bill to their Resolutions Committee in November 1972 to learn if it was potential

legislation that the Association would be willing to support in the 1973 session of the Illinois Legislature. Their Resolutions Committee subsequently agreed to support the legislation, and the Association sought sponsors for the statute. Representatives Bruce Waddell and Donald Brummett, after reviewing the proposed statute, agreed to serve as the primary co-sponsors of the bill, although 29 other legislators joined in serving as sponsors.

Two bills were drafted, House Bill 770, which was solely devoted to the weather modification statute, and House Bill 771 which was the bill designed to obtain the annual appropriation for the weather modification activities required within the Department of Registration and Education. These were both entered into the legislative process of the 78th General Assembly in January 1973.

The bill was reviewed by the Agricultural Committee of the House of Representatives in April, and it was passed into the House by a unanimous vote of the Committee. It was agreed that two minor amendments would be made to the statute: one concerning the annual allotment, and one concerning the daily fee to the board members. The bills were passed unanimously by the House.

The bill was reviewed in June by the Senate Committee on Agriculture , Conservation, and Ecology, and it was passed into the Senate by a 9 to 1 vote. The Senate subsequently passed on both bills in late June. Governor Walker signed House Bill 771 into law on 10 September, and signed House Bill 770 into law on 12 September.

#### MAJOR SECTIONS OF STATUTE

The actual statute as enacted can be examined for its total content and detail. The major sections of the bill (House Bill 770) are mentioned here to reveal its general content and structure.

First, is the declaration of purpose and it identifies the Department of Registration and Education as the state agency responsible for the duties and activities described in the bill. Then, comes a set of 11 definitions that pertain to the terminology that is to follow.

The next major section reveals that the administrative authority for the duties rest with the Director of the Department of Registration and Education. He is responsible for actually structuring the various rules and regulations, and for performing the functions in the statute. This is an important aspect of the bill inasmuch as the bill develops a framework for activities for the Department which then has to develop the procedures and in-depth regulatory materials needed to actually perform the basic functions assigned in the bill.

The Director of the Department of Registration and Education, as shown in the next section of the bill, will name a Weather Modification Board to advise him. It is to be composed of five members from different disciplines, and this board is to meet at least once annually and as often as the Director desires. The Board's functions are delineated and are very important in the activities developed in the bill.

The next sections describe the Department's need to make regulations, and their power to make investigations, to call for hearings, and to make interstate compacts. Certain exemptions to the legislation are noted in another section, and included are research and development activities related to weather modification.

The next five sections of the bill relate to the licensing of activities for Illinois qualifications, fee, and revocation. The subsequent 8 sections of the bill relate to the obtaining of a permit, needed to perform a specific seeding operation in a fixed area and for a given period of time. Included in these 8 sections are the requirements for enumerating the operations planned, the cost and fees involved, the liability to be assumed by the operator, and any possible revocation activities.

The final sections of the bill concern 1) rights of the Department to investigate any ongoing seeding activities and to call a halt to them if it deems them to be against the benefit of the State; 2) the state's immunity; 3) penalties for violations; and 4) requirements for reporting of seeding activities to the Department.

#### SUMMARY

A systematic, well-planned activity, primarily involving three staff members of the Illinois State Water Survey and Professor Ray J. Davis of the University of Arizona as a consultant, led from the recognized need for a weather modification statute in 1971 through its completion and enactment as law in 1973. This 2-year activity to secure proper weather modification control legislation for Illinois is considered to be one of the primary achievements of PEP. The entire effort was state funded. The activity was conceived in a well-ordered manner beginning with an intensive literature review to determine the status of the legislation and the legal aspects of weather modification; then a well-executed development of a statute document using a national expert to write the basic document; concurrently informing the public and agricultural interest groups who in turn reviewed and altered it; and finally the implementation of the statute which was helped by the Illinois Agricultural Association and then secured through the skillful handling of it in the legislature by the sponsors of the bill.

The termination of this activity of PEP has resulted in a weather modification permissive-control law that is considered to be a "model law" for state weather modification legislation. Certainly it is deemed to be the optimum type of document to secure the proper control leading to protection and benefit to the citizens of Illinois from weather modification in the future. It has been a most satisfying activity, blending science, law, and public relations.

#### REFERENCES

- Davis, R. J., 1968: The Legal Implications of Atmospheric Water Resources Development and Management. Final Report Contract 14-06-D-6224, Univ. of Arizona, Tucson, 248 pp.
- Davis, R. J., 1970: The State Regulation of Weather Modification. Arizona Law Review, 12, 35-69.
- Huff, F. A., and S. A. Changnon, 1972: Evaluation of Potential Benefits of Weather Modification on Agriculture in Illinois. J. Applied Meteorol., 11, 376-384.
- Schleusener, R. A., 1970: Weather Modification Regulation. J. Irrigation and Drainage Division, ASCE, IR 3, 281-288.